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ABSTRACT

Second in the series "Reading-to-Write: Exploring a Cognitive and Social Process," this report looks at the different ways students represent reading-to-write tasks to themselves, analyzes the resulting divergence in their writing goals and strategies, and recommends teaching task representation as an interpretive process that continues throughout composing. The report describes a task-representation study in which undergraduate and graduate English majors performed an open-ended reading-to-write task and transcribed their thinking-aloud protocols. Following the introduction and description of the study, the report discusses the various organizing plans elicited in the study, including plans to summarize, respond, review and comment, synthesize ideas around a controlling concept, and interpret or use ideas for a rhetorical purpose. The report then proposes the theory of task representation as a constructive process organized around the following principles: (1) the constructed task is an integration of a set of options and schemas analogous to menu choices offered on personal computer; (2) because task representation depends on noticing cues from the context and evoking relevant memories, it can extend over the course of composing; and (3) developments and changes in a writer's representation can lead to problems in constructing an integrated task and text. Finally, the report considers ways to evaluate different organizing plans and text types, arguing that the best plan is the one that fits both the situation and the writer's goals. (JG)

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CENTER FOR THE STUDY OF WRITING

Technical Report No. 6

THE ROLE OF TASK REPRESENTATION IN READING-TO-WRITE

Linda Flower

June, 1987

This paper is Report 2 in the series entitled
Reading-to-Write: Exploring a Cognitive and Social Process
by Linda Flower, John Ackerman, Margaret Kantz, Kathleen McCormick, Wayne C. Peck, and Victoria Stein

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READING-TO-WRITE:
EXPLORING A COGNITIVE AND SOCIAL PROCESS

**Linda Flower, John Ackerman, Margaret Kantz,
Kathleen McCormick, Wayne Peck, Victoria Stein
Carnegie Mellon**

In an effort to understand reading-to-write as both a cognitive and a social process, this study was designed as a collaborative research project in which we tried to approach a common body of data from a number of different perspectives. The following reports are part of this joint project from the Center for the Study of Writing at Carnegie Mellon.

**Report 1. Studying Cognition in Context: Introduction to the Study.
Linda Flower**

Reading-to-write is an act of critical literacy central to much of academic discourse. This project, divided into an Exploratory Study and a Teaching Study, examines the cognitive processes of reading-to-write as they are embedded in the social context of a college course.

**Report 2. The Role of Task Representation in Reading-to-Write.
Linda Flower**

The different ways in which students represented a "standard" reading-to-write task to themselves lead to markedly different goals and strategies as well as different organizing plans. This raised questions about the costs and benefits of such alternative representations for students and about students' metacognitive control of their own reading and writing processes.

**Report 3. Promises of Coherence, Weak Content, and Strong Organization: An Analysis of the Student Texts.
Margaret Kantz**

Analysis of students' Organizing Plans (including free response, summary, review and comment, synthesis, and interpretation for a rhetorical purpose) also revealed a hybrid plan in which certain coherence conventions gave the promise of synthesis while the paper's substance reflected a simpler review and comment strategy. Both students and teachers, it appeared, may sometimes confuse coherence strategies (for text) with knowledge transformation strategies (for content).

**Report 4. Students' Self-Analyses and Judges' Perceptions:
Where Do They Agree? John Ackerman**

Any writing assignment is a negotiation between a teacher's expectations and a student's representation of the task. Students' Self-Analysis Checklist showed a strong shift in perception for students in the experimental training condition, but a tellingly low (37%) agreement with judges' perceptions of the texts.

**Report 5. Exploring the Cognition of Reading-to-Write.
Victoria Stein.**

A comparison of 17 freshmen and 19 older students revealed differences in ways students monitored their comprehension, structured the reading and planned their text. A study of these patterns of cognition and case studies of selected students revealed both some successful and some problematic strategies students brought to their reading-to-write task.

Report 6. Elaboration: Using What You Know. Victoria Stein

The process of elaboration allowed students to use prior knowledge not only for comprehension and critical thinking, but also structuring and planning their papers. However, surprising little of this valuable thinking found its way into students' papers.

Report 7. The Effects of Prompts Upon Revision: A Glimpse of the Gap between Planning and Performance. Wayne C. Peck

Students who were introduced to the options of task representation and prompted to attempt the difficult task of "interpreting for a purpose of one's own" on revision were far more likely to change their organizing plan than students prompted merely to revise to "make the text better." However, the protocols also revealed a significant group of students we called "Intenders" who, for various reasons, made plans they were unable to translate into text.

Report 8. Translating Context into Action. John Ackerman

One context for writing is the student's history of schooling and high school assignments and essays. Based on protocols, texts, and interviews, this report described a set of "initial reading strategies" nearly every freshman used to begin the task, strategies that appear to reflect their training in summarization and recitation of information. From this limited and often unexamined starting point, students then had to construct a solution path which either clung to, modified, or rejected this arhetorical initial approach to reading and writing.

Report 9. The Cultural Imperatives Underlying Cognitive Acts. Kathleen McCormick

By setting reading-to-write in a broad cultural context we explore some of the cultural imperatives that might underlie particular cognitive acts. Protocols and interviews suggest that three culturally-based assumptions played a role in this task: the desire for closure, a belief in objectivity, and a refusal to write about perceived contradictions. Alternative kinds of assignments can encourage both cognitive and cultural self-awareness.

Report 10. The Transition to Academic Discourse. Linda Flower

The process of comprehension provides a solid foundation for reading-to-write, so strong, in fact, that it can carry out most of the work in less complex versions of the task. As students moved from a comprehension-based process to more fully rhetorical, purpose-guided composing process, they embedded strategies such as "gist and list" and the "true, important, I agree" strategy for selecting information into dialogues with the text and, in some cases, into a constructive planning strategy focused on the problem of text-making itself.

Report 11. Expanding the Repertoire: An Anthology of Practical Approaches for the Teaching of Writing. Kathleen McCormick et al.

One important implication of this study is that students themselves should come into the act of examining their own reading and writing processes and becoming more aware of cognitive and cultural implications of their choices. This set of approaches, written by teachers collaborating on a Reading-to-Write course that grew out of this project, introduces students to ways of exploring their assumptions and alternative ways of representing aspects of the task.

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THE ROLE OF TASK REPRESENTATION IN READING-TO-WRITE

By

Linda Flower
Carnegie Mellon University

Academic papers are typically written in the context of a rich rhetorical situation which includes not only the conventions of academic discourse, but the expectations of the instructor, the context of the course, and the terms of the assignment. These requirements can seem so self-evident we are surprised when once again twenty students in a class interpret the same "standard" college writing assignment in strikingly different ways. This paper is about that act of interpretation. Task representation is an interpretive process which translates the rhetorical situation--as the writer reads it--into the act of composing. As such, it is the major bridge which links the public context of writing with the private process of an individual writer. Therefore, let me introduce this process by sketching three public contexts in which students' task representations mattered.

In the first, the instructors of the freshman composition course at my school were in our weekly seminar meeting, trying to understand/diagnose some of the student strategies behind the papers we were reading on the problem analysis assignment. Writing a problem analysis, as we saw the task, was an occasion to struggle with a significant issue--a problem of the sort which resisted pat answers and called for the extra scrutiny writing allows. In the paper at hand, a young woman had written a polished, coherent essay on the problem posed by a "rainy day " with its awful train of decisions about choosing the right clothes and the dilemma of skipping puddles to class. A mildly clever, discouraging paper. It wasn't the sort of analysis we had in mind. In the freshman literature course that same week the instructors had spent a class session talking with students about how the response statements due Monday would allow, would even demand that students go beyond the summaries they had written in high school. A response statement, the instructors had discussed, asked students to record, then examine their own response. The first papers were in with students claiming they had indeed done this analysis. Fifty per cent were plot summaries. Meanwhile, over the bridge at the University of Pittsburgh was a third context which we can reconstruct from David Bartholomae's discussion of a student's freshman placement essay (1985). The reader on the placement committee had come to that place in the essay that would make or break it as acceptable academic discourse--that would place this student in or out of basic writing: "At this point the [student] writer is in a perfect postion to speculate, to move from the problem to an analysis of the problem, however. . . . We get neither a technical discussion nor an 'academic' discussion but a Lesson on Life" (p.137). In failing to make that expected move to analysis, the student had just become a basic writer in the eyes of an institution.

Why, we want to ask, are these students doing what seems to be the "wrong task" in the eyes of their readers --especially on these short assignments to which a grade or even placement is attached? Is it because they are unmotivated, despite the serious looks that suggest they, too, are disappointed, if not perplexed, by our response? Is standard "academic discourse" a new phenomenon to <u>all</u> of these students? Isn't the assignment clear, even explicit? If our task involves reading to write, is it that they just haven't thought about the assigned readings deeply enough to have something to say? Somehow these answers don't do justice to the real effort made by both students and teachers.

The phenomenon repeats itself in classes outside of English. Teachers ask students to attempt some "standard" form of disciplinary discourse because they want to expand the students' repertoire by teaching a particular way of thinking and writing. Yet the class seems to be doing a variety of different assignments. Some of these variations are welcome inventions; but others suggest that the student is still confused about what academic discourse calls for. Writing about the problem of a rainy day probably seemed as trivial to the student who did it as it did to the

instructor. The purposes of college were not being served for anyone. When writing goes awry in this way it is as though there were a band of writers each marching to a different drummer in the good faith that he or she was "doing what the assignment called for."

This study looks at one way we might help students learn to understand and manage the special demands of academic discourse. Part of the problem, we propose, may not lie in the student's ability or even knowledge of the discourse *per se*, but in the way that student has construed the task. If this is true, students are likely to have many abilities they could use if they prompted themselves to do so. This chapter will suggest that we may want to look at ***task representation*** not as a single, simple decision, but as an extended interpretive process that weaves itself throughout composing. The task as students represent it to themselves is, by definition, the one they perform, but that representation is subject to many influences and may evolve in surprising ways during writing . This process of task representation, we will suggest, may be far more involved, unpredictable and powerful than we have supposed.

This problem of interpretation can be partly described in terms of the implicit requirements of academic discourse which students are expected to infer. For instance, if we tell students that they need only look into their hearts and write from experience, are we assuming that the "personal essay" *our field has in mind* is simply a natural genre the student would discover by consulting those private wellsprings? Pat Bizzell has critiqued this assumption in textbooks that proport to teach "good" writing, when in fact they aim to teach a genre-specific form of good writing that has some quite explicit, if unarticulated rules (1986). Kathleen McCormick's critique of a naive use of "response statements" makes a similar point (1985). Response statements as she describes them are not pure, untrammeled "response" to a text. Rather, they are a specialized form of discourse in which students are expected to *use* their personal response to examine their own reading process and assumptions about texts. Bazerman argues that the discourse conventions of the various disciplines pose a similar problem in writing across the curriculum (1981). The task of student writers is to enter the on-going intellectual conversation of an established community.

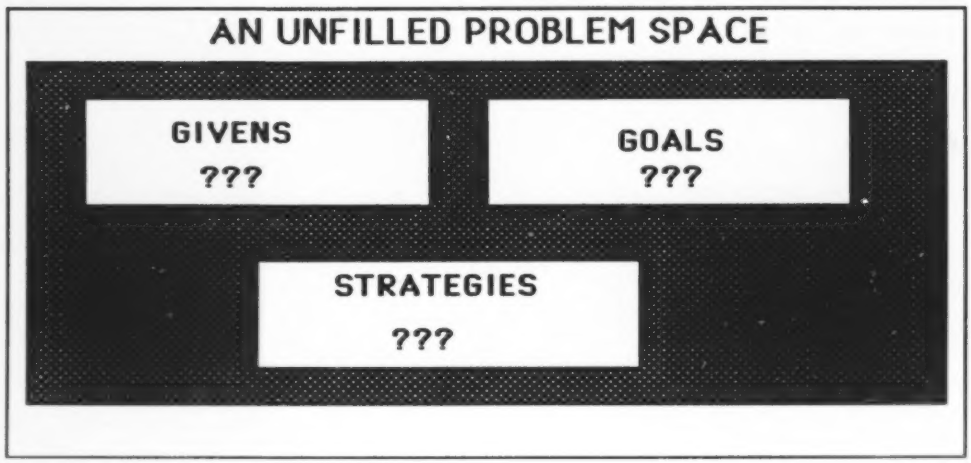
Writing is a move in a discourse game with rules, an action in an intellectual and interpersonal context. Nevertheless, the process of interpreting a task--imagining the action that is called for-- is sometimes equated with merely "following an assignment" and, as such, is relegated to remedial workshops on study skills. Teachers want to deal with heady intellectual processes, not with helping students ferret out "what the teacher wants," so they leave it to students to interpret assignments, even though the instructions may be long, and imaginative, and complex. Indeed, many teachers hold it as a badge of merit that they refuse to tell the students "what they want" in the desire to foster independence of thought. Yet there is sometimes a fine line between maintaining this proper reticence and creating a guessing game in which students who know how to succeed in school do, while those who don't are expected to infer it on their own.

We find ourselves in a perplexing position. The genres we hold to be self-evident are not that way to everybody, after all. As Mina Shaughnessy has suggested, we seem to be urging some students, who do not know the "rituals and ways of winning arguments in academia, . . into the lion's den of academic disputation with no more than an honest face for protection " (1977, p. 319). But this is not merely a problem of underprepared students. As we become more aware of the interpretive processes of readers and the multiple faces of academic discourse across disciplines, we must face the fact that students do intepret and may often misinterpret the college writing tasks they set out to do. If, indeed, the process of task representation plays the significant role I am suggesting, our problem is even more interesting. As a field we have almost nothing to say to students or each other about *how* writers represent tasks during composing and about the *features* of alternative representations students bring to any standard task.

Task Representation

Writing starts with a rhetorical situation that poses a need to write or, in the terms of this discourse, that poses a task that calls for problem-solving. Given that context, the first thing writers must do is define the problem or construct an image of that situation or task for themselves.

We can think of this task theoretically as a problem space (Simon, 1973). This metaphoric space is made up of all the possible goals the solver might consider, all the possible operations, strategies, or moves that might be taken, and all the possible givens, or conditions that might constrain the solver's action. The theoretical problem space for even everyday problems is often enormous, but, of course, we only work with those aspects of infinite possibility that we represent to ourselves. We solve the problem we construct. The process of task representation begins, as Figure 1 suggests, when the problem solver begins to represent the givens and constraints of this situation, the goals she would attain, and the strategies or actions she might take, since together these constitute the problem she is solving.



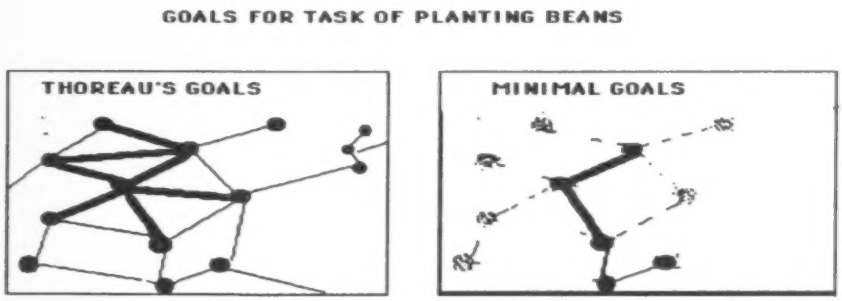


Figure 1. The Content of a Problem Space

For example, we can imagine two people thinking about the task of "planting beans." One person has a rather simple representation:

The **Givens & Constraints**: Is it warm out there yet? Did I remember to order a packet of Kentucky Wonders from Park Seed?
The **Goals**: Go out there; get 'em in; pick'em; and eat 'em.
The **Strategies**: You make a row, sprinkle beans, stomp it down and pray for rain.

We might compare this representation to that of Henry David Thoreau (see Figure 1), who also gave some thought to the task:
The **Givens & Constraints**: Two and a half acres of upland, no equipment, and a

plentiful supply of hungry woodchucks were part of this reality. However, Thoreau often seemed to interpret his constraints as sources of value: "As I had little aid from horses or cattle, or hired men or boys, or improved implements of husbandry, I was much slower, and became much more intimate with my beans than usual (1964, p.406).

The **Strategies** : Thoreau's strategies for growing beans suggest a task of somewhat more heroic dimensions than our first. For instance, his habit is "to go daily to the rescue armed with a hoe, to thin the ranks of the enemy, to fill the trenches with the weedy dead."

The **Goals**: Thoreau's goals also look oddly different. His agenda in planting a field of beans was nothing less than to "live deliberately" and to "know beans." It matters little, he said, to fill the farmer's barn. The goal of the husbandman, in Thoreau's remarkable vision of this task, is not to amass bushels but to "cease from anxiety."

These two visions of planting beans may have little more in common than sunshine and bean seeds. And to a hardworking farmer in 1854 it is likely that neither of these representations would seem sensible. Yet each has a logic and a rightness of its own. The point of this simple example is two-fold:

- First, a task is something people construct, even when they assume there is a common sense version everyone would hold.
- Secondly, the levels of complexity within a given task can vary enormously. If this happens with beans, what happens with academic writing?

Do students within the same class construct the same task for themselves?

Does their image of the task resemble the image constructed by the instructor?

And if these various representations differ, as on some level, of course, they must, do those differences really matter? Do they have a real impact on teaching, on learning, on succeeding in school?

Cross cultural studies have given us some graphic examples of assignments and tests which were supposedly designed to test intelligence or cognitive capabilities (such as the power to abstract), but were in fact only describing task representation, that is, they were measuring the testee's assumptions about what a tester might want in posing such a peculiar task. Goodnow's (1976) review of the problems in interpreting cross-cultural research shows how this hidden variable of task representation can crop up in studies that intended to measure how literacy affects cognition.

The "wise man/foolish man" phenomenen is a good example of this hidden influence. Our culture places a great value on the the ability to abstract and classify in certain ways (Arnheim, 1954), and we often track the development of this ability as a measure of growth in writing ability (Britton, *et al.*, 1975, Freedman and Pringle, 1980). Investigators among the Kpelle people asked the Kpelle to classify a set of 20 familiar objects that (to our eyes) belonged in 4 categories: food, clothing, tools, and cooking utensils (Glick, 1975). The Kpelle persistently grouped them in 10 groups of 2 based on concrete relations, e.g., "the knife goes with the orange because it cuts it." Should we conclude that these people do not carry out formal operations, that they lack these cognitive maneuvers? Glick (1975) however, noted:

> That subjects at times volunteered " 'that a wise man would do things in the way this was done.' When an exasperated experimenter asked finally, 'How would a fool do it?' he was given back [groupings] of the type . . . initially expected--four neat piles with foods in one, tools in another" (p.636, quoted in Goodnow, p. 171).

Closer to home, these studies have also taught us that certain general tendencies in representing tasks--which we take as a sign of intelligence or commitment--may also reflect culturally induced assumptions about how to handle a school task.

> Within our traditions, for instance, "learning by doing" and "learning from one's mistakes" are often acceptable, and guessing is usually expected. These are the traditions that make an early try feasible. . . . Groups such as the Navaho [by contrast] appear to rely on "prolonged observation, or 'prelearning' . . . . A

> reluctance to try too soon and the accompanying fear of being 'shamed' if one does not succeed may account for the seemingly passive, uninterested, and unresponsive attitude of Indian students" (Ohannessian, 1967, p. 13, quoted from Goodnow, 1976, p.181).

Goodnow used this example to show how a "let's have a go at it" attitude toward school tasks can affect test taking. How, we might ask, would this image of school tasks affect students asked to generate tentative plans, notes, or drafts and then to revise?

Labov came to much the same conclusion in *Language in the Inner City* when he attacked the myth that lower-class black children are verbally deprived and unable to deal with abstract, logically complex, or hypothetical questions (1972, p.220). The source of that myth, he argued, was in what we are calling task representation. Black children placed in settings without normal social support were asked to perform in ways they found mystifying, unmotivated (why should I tell you, an adult, that this is a space ship you are pointing to), or unreasonable (you want me to tell you about the fights I get into!?) Labov was able to show how changes in the context could elicit striking differences in performance--changes that he attributed to both motivation and the child's intepretation of the task.

> One can view these test stimuli as requests for information, commands for action, threats of punishment, or meaningless sequences of words. They are probably intended [by teachers or experimenters] as something altogether different--as requests for display, but in any case the experimenter is normally unaware of the problem of interpretation. (p.221)

In these studies of discourse communities, of literate thinking, and of language use we can see not only the influence of context, but that that ***context is constantly being interpreted by language users***. This study will try to add another piece to this picture of cognition in context by looking at the process of task representation itself. In particular, how do students handle this interpretive process on standard college writing tasks? Are they any more cognizant of this intervening variable than we are as researchers and teachers?

Although task representation may be an important decision, the process is often carried out with little or no awareness on the part of the writer (Baker and Brown, 1984, Anderson, 1980). For familiar problems the process of representation is likely to be highly automated; it takes little conscious attention and the problem-solver may be reluctant to attribute any decision making or selective process to himself. He merely did what the assignment said. This feeling will be especially strong if the task invoked a well-developed schema, such as the schema for writing a thank-you note. Less familiar, more complex tasks, however, can call for extended exploration as a writer considers tentative, alternative ways to imagine the problem. In this process of interpreting a rhetorical situation, imagining what a reader would expect, gauging one's own feelings about a topic, envisioning ways to present a position, and even considering the meaning of terms in an assignment, writers are making critical decisions. They are setting goals and choosing actions that constitute a master plan and set of global instructions for how to approach this task. In an important study of the way social scientists approach problems in history and economics, Voss et al. (1983) found that experts created elaborated representations of a problem, features which they then tested and argued with as they worked toward a solution. This deliberative process, of course, takes time and effort; one wants to use one's highly automated processes whenever they will do the job. The problem in teaching is helping students learn to invoke conscious choice and evaluative awareness on complex problems that need them. Learning to manage academic discourse seems to be just such a problem.

TASK REPRESENTATION IN READING-TO-WRITE: THE EXPLORATORY STUDY

In the remainder of this chapter we will look in depth at the task representation process of students in a series of informal classroom experiments with undergraduate, masters and Ph. D.

students, a series we have labeled the Exploratory Study. This initial phase of the reading-to-write project opened up the territory for the more controlled observations of freshmen, labeled the Teaching Study and described in other reports in this series. The Exploratory Study is interesting for the hypotheses and questions it generated, for the template of alternative representations it provided, and for its rich picture of individual responses. That is where we will start.

It is not easy to understand, much less manage one's own composing process. Our knowlege of how this process operates in real time is often distorted by assumptions and conventional wisdom about how it should work and by the limits of our vocabulary for talking about the process. Because the romantic literary tradition, on which we depend for metaphors about writing, valued inspiration and talent over cognition and effort of mind, we may fail to appreciate the process of sustained thought that goes into normal writing. Even introspection, which is so essential to critical thinking and problem-solving, can be a blunt tool for uncovering cognitive processes, since people tend to recognize and remember those acts they expect and know well. Moreover, much of the cognition of writing, like that of any problem-solving act, is fleeting. People perform fascinating intellectual maneuvers, but once those maneuvers accomplish their end, thinkers wipe the mental slate, recalling only the result they struggled toward, and report that "it took a while, but finally it just came to me" (Flower, in press).

Process tracing experiments, as a form of classroom research, let students get a more vivid and accurate look at their own writing process (cf. Penrose, in prep.). As joint research projects carried out by teachers and students, they not only inform the teacher (as in traditional classroom research), but are an important part of the course content for the students. Both parties have an investment in discovery.

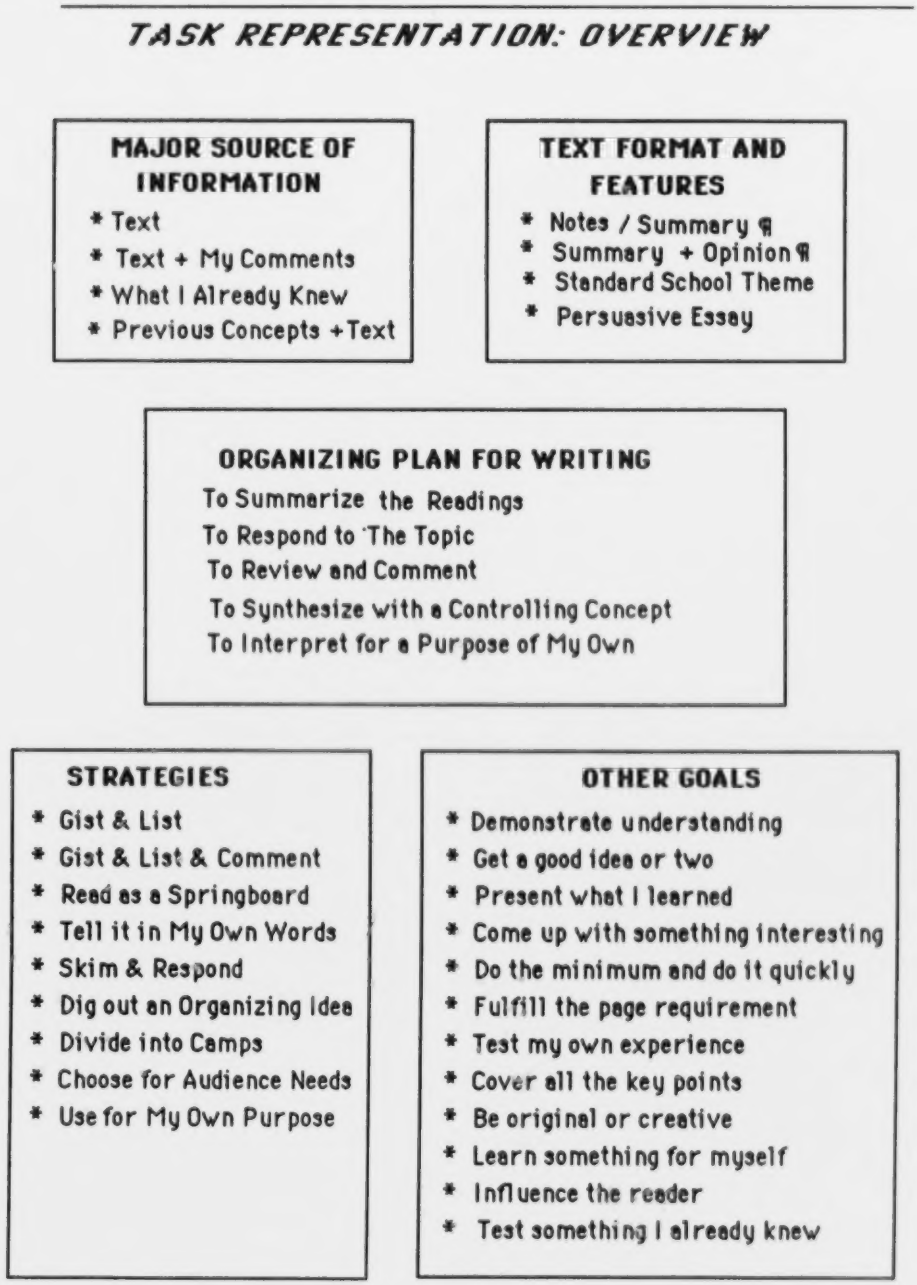
The Exploratory Study began as a classroom experiment designed to look at the process of reading to write. For the junior, senior and graduate students involved, reading to write was a process worth examining. It was the mainstay of their college work and it was going to be as important on the job to the writing majors as it would be to the teachers. So I asked the class to do a small reading-to-write task and to collect a thinking-aloud protocol of themselves doing it. That is, they were asked to think aloud to themselves as they read the source text and planned and wrote their short assignment, making a tape recording of the flow of their thoughts which they later transcribed (see Appendix 1). They could then use the protocol transcription to look more closely at their own process. A week later they returned to class to make a short presentation on "an interesting feature of my own process." (They would later do a short paper in which they applied what they learned to teaching, or professional writing, or themselves.)

What I didn't tell them was that I had, in a sense, stacked the deck. In order to let them see as much of their own decision process as possible, the assignment was designed to simulate a typical, open-ended, underspecified, and overloaded assignment--it asked for everything: read, interpret, synthesize, use all the "relevant" data, write your own statement and be comprehensive. On the other hand, by reciting all the sacred words of a standard college assignment, the assignment tried to be everything and hence nothing in order to let students catch a glimpse of how *they were choosing to represent* this Rorschach blot to themselves.

The assignment and source text (in Appendix 2) used with the English majors in this study was a series of quotes, notes and comments on the topic of revision. The goal was to create a short text (manageable in a classroom experiment), that simulated the experience of going to the library and reading a variety of sources with their distinctive voices and claims, in order to write a paper of one's own. Some of the authors of the source texts disagree with one another; others are simply speaking at cross purposes. Some passages bury the relevant information on revision in a subordinate position to another, distractor topic. . Finally, there is no single issue or topic which organizes this set of notes; any ordering principle would have to come from the writer.

Consider, if you will, how you would go about this task, were you a member of the class. In asking this question with various groups of teachers, I found people quite divided as to what the task requires. Some felt that the situation obviously called for summarizing. As a responsible

writer, one would want to do justice to all the material here, reducing it to a concise and accurate set of gists organized around a central idea. Other teachers, looking mildly appalled at that prospect, said they would respond to the reading material as a springboard to writing about something they found personally relevant. And there were other responses. If we found this diversity in how experienced teachers construed this reading-to-write task, what would students assume? And how would they go about the process of construing?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* Notes / Summary ¶
* Summary + Opinion ¶
* Standard School Theme
* Persuasive Essay
ORGANIZING PLAN FOR WRITING
To Summarize the Readings
To Respond to The Topic
To Review and Comment
To Synthesize with a Controlling Concept
To Interpret for a Purpose of My Own
STRATEGIES
* Gist & List
* Gist & List & Comment
* Read as a Springboard
* Tell it in My Own Words
* Skim & Respond
* Dig out an Organizing Idea
* Divide into Camps
* Choose for Audience Needs
* Use for My Own Purpose
OTHER GOALS
* Demonstrate understanding
* Get a good idea or two
* Present what I learned
* Come up with something interesting
* Do the minimum and do it quickly
* Fulfill the page requirement
* Test my own experience
* Cover all the key points
* Be original or creative
* Learn something for myself
* Influence the reader
* Test something I already knew

Figure 2. Key Features of Students' Task Representations

Over the course of these classroom experiments it became apparent that writers' top-level, global images of the task were regularly differing from one another on certain key features, which are presented as a menu of options in Figure 2. They were: the Major Source of Information, Text Format and Features, the Organizing Plan, Strategies, and Goals. The analysis which follows will be organized around four issues that this diversity raised:

1. The Power of the Organizing Plan
2. How is a Task Representation Created?
3. Costs, Benefits, Cognition and Growth
4. Taking Metacognitive Control: Awareness vs. Standard Strategies

1. THE POWER OF THE ORGANIZING PLAN

A dominant feature of every writer's vision of this task was the organizing plan used to structure what was being read and to structure the writer's own text. This organizing plan reflects a critical decision for a number of reasons. To begin with it guides the processes of reading and writing themselves. A plan to synthesize, for example, calls up certain strategies for manipulating ideas and transforming knowledge that a plan to summarize does not generally evoke. The organizing plan is also one of the bridges between process and product, since it dictates the organization of the written text . The logic of the organizing plan helps create an underlying coherent structure, visible in such places as introductory paragraphs, transitions, topic sentences, and conclusions. Because these structural features have such impact on the way instructors evaluate a paper, the organizing plan can influence students' grades. This is especially true if instructors value some organizing plans, such as synthesis or interpretation, as more intellectually significant than others, such as summary. If the choice of an organizing plan has such an impact on the process, product, and social outcomes of writing, what happens when students do not recognize the alternatives among which they are "choosing" or if they do not even realize that they have the option of choice?

To illustrate the alternative plans this particular task elicited, I will draw on the presentations students made as part of the process experiments and on their responses to one another.

The Organizing Plan to *Summarize*

Martha was a good student in a quiet, dutiful, straightforward sense of the term. She was an engineering student in her junior year, nervous about writing in general and about this class of English majors and MAs in particular, but used to succeeding and getting things right. She was also very clear about how to do this task. She used what we later began to call the ***gist and list*** strategy. In her view, you read through the text with some care, find the key words in each paragraph, and summarize it trying to capture its main idea. You then write your paper around this string of well-wrought gists. An important caution goes along with this plan: sometimes a new idea occurs to you as you are writing--a different way to organize or an idea you are interested in. If that happens, don't be led astray. You must decisively set that idea aside, for it will only confuse you and your paper.

In examining and describing her own process, Martha had uncovered for herself a well-honed strategy that she obviously relied on for other assignments. This task was, she concluded in her presentation, "just like doing a research paper. " If we respond to this plan as "mere" summary, it is important for us to realize that Martha did not see it as a limited or low effort choice. She was very serious about her work and serious about this presentation. She was describing the task as she saw it, and as (I believe) she assumed everyone else saw school writing.

The dynamics of this class are themselves a part of the story of this research. By a stroke of

fortune, Martha's presentation had been the very first in the two-day series of talks on what each student discovered. Her well-defined vision of the task, which we began to call the efficiency expert strategy, created a backdrop against which other representations took shape. In fact, a dialogue began with the very next presentation. That writer, Kate, was an economics major at the beginning of her MA in professional writing. Since she seemed to approach everything with Irish energy to spare, it didn't seem so surprising when she said that it never occurred to her to use the source text in the way Martha had. In fact, the interesting feature from her protocol was the way the topic of the paper itself had been determined by her sense of an imagined audience. She decided on relevant content information by first imagining an audience of students she had once tutored and then deciding what they might want to hear about revision. This was such a standard strategy for her, she told us later, that she even had a mental formula for it: T= f(A). Topic is a function of the audience.

I will return to Kate's vision of this task later. The point of my narrative digression here is simply to convey the impact this sequence of presentations had on all of us. The question of right or wrong was temporarily in abeyance since the point of the experiment was to uncover something interesting about one's own strategies on this small experimental task. What became increasingly clear was that people in the room were holding radically different representations of the task and relying on strategies that would inevitably produce very different papers. Yet each assumed he or she was simply doing the task. Let me briefly sketch the other dominant organizing plans that emerged from these visions of the task.

The Organizing Plan to *Respond To/Write About the Topic*

In sharp contrast to the summarizing plan, some students were not inconvenienced by the assigned text, because they choose to talk about what they already knew. They used the reading as a springboard to trigger their own ideas or response to the topic in general. Notice that this is a more freewheeling plan than one which would require responding directly to the claims in the source text. This plan for reading and writing can produce excellent themes which are well-organized and unusually interesting because they are based on ideas the student has already thought about and is already motivated to consider. In many writing classes, this is exactly the task teachers want writers to give themselves. On the other hand, this task, like summarizing, sidesteps the process of *integrating* one's own knowledge with that of the source text. It typically simplifies the process of reading-to-write.

Our best insight into this plan came from a student's description of a ***skim and respond*** strategy which she discovered in her protocol and came to recognize as one of her most dependable strategies for generating text. The example from her protocol begins with Janet reading a line from the source text (underlined in the excerpt below), followed by a brief period of thinking, and then composing a sentence (in italics). In Janet's description of this process, the sentence she composed came tumbling out with the energy of a discovery. Notice, however, the relation between the ideas about revision in the source text and those in Janet's claim.

> Good writers check to see if plans have changed mid-stream (source text). Um, I guess, let's see, your first thoughts are usually muddled or come out like a tidal wave. The tidal wave effect. ***The tidal wave effect of a rush of initial ideas or thoughts can be cleaned up and clarified on revision (draft text).***

Janet's strategy was to skim the source text, waiting for those points which would trigger a response and give her something interesting to say. In her example, the term "mid-stream" (and the notion of change?) seems to have triggered the idea of tidal waves. The link is a lexical rather than propositional one; the two texts are not even talking about the same subject. A series of inferences and associations based on the surface of the source text led Janet to generate her own idea. In her presentation, Janet was intrigued with this discovery because this was the strategy that had gotten her through college. It had been especially good for English courses, she reported; she had once written an entire paper on a word in Shakespeare.

As the course went on, it became clear that Janet relied on this local skim and respond strategy so heavily because she, like a few other students in the class, also depended on the larger plan of Responding to the Topic to organize her reading and writing. In the attempt to find something interesting to say, the substance of the source text served primarily as a springboard for thought or trigger for past associations. And in Janet's version of the strategy, sometimes only the words of the source mattered.

As students talked on, a vision of the costs and benefits associated with these different organizing plans began to emerge. This is one of the critical issues of task representation we will return to, but Janet and Martha illustrate the basic question. Martha's gist and list strategy is highly efficient, a very intelligent plan for many tasks. On the other hand, this summarizing task eliminates the possibility of exploring or expressing one's own ideas. And it is probably not the task instructors have in mind on many college assignments. Janet's plan of Responding to the Topic had apparently stood her in good stead in some undergraduate literature classes. But in my class she was having genuine difficulty with assignments which asked for a sustained argument and focused analysis of an issue. Our exploration of alternative organizing plans and the strategies which supported them were raising the question: what are the costs and benefits for the writer which these different representations carry with them?

The Organizing Plan to *Review and Comment*

Many students took a middle ground between summarizing and abandoning the source texts. They carried on what one student called a "dialogue" with their sources in which they would alternate between reviewing or summarizing a source and then adding their own comments, criticisms, or associations. A more formal version of this plan was one many students had done in high school in which the writer summarizes a source and then adds an "opinion paragraph" at the end.

This plan not only allowed writers to express their own ideas, it led to an easy and natural way to compose, since the text could be structured like a conversation built on the scaffolding of the source text. This ease was also its limitation as a plan for thinking or persuading. The review and comment plan did not lead the writer to pursue connections or conflicts or to build an integrated picture of a topic.

Since this plan begins to assume major importance when we turn to the work of freshmen, we will return to it later. The final two plans we observed are distinguished by the prominent role they give to integration of
ideas.

The Organizing Plan to *Synthesize Ideas around a Controlling Concept*

Some writers gave themselves an addititional set of goals that went beyond summarizing or reviewing and commenting on the text. They saw their task as organizing information, from both the source and themselves, under a controlling, synthesizing concept. Unlike the summarizers, they read the the source text with an eye to uncovering a unifying thread or to creating one, and they tried to organize their own texts around this central concept. And unlike the students who saw the task as responding to the topic, the synthesizers made themselves responsible for (at least some of) the ideas in the source texts.

Given the wide range of meanings people assign to the term synthesis, we want to be precise about the way it is used here. In this study, a text with a "synthesizing plan" was operationally defined as having these features:

1) It offered the reader a clearly articulated "synthesizing concept" which one could actually locate in the text.

2) This concept was a substantive, informative idea rather than an immediately obvious inference. For instance, a text which stated that "there are many opinions on revision" and proceeded to summarize the sources was not held to be governed by a unique "synthesizing"

concept.

3) Finally, this concept not only appeared in the text, it worked as a controlling concept that governed the selection of information and the organization of the entire text. A synthesis must have a controlling concept that indeed controls.

To us as instructors the benefits of this organizing plan may seem particularly striking. To begin with, it encourages thinking processes which learning theorists and reading educators would want to foster. It asks the student to read source texts for ideas at the level of gists not details (Brown and Day, 1986), to generate his or her own macro-level structure of ideas (Meyer, 1982), and to integrate this information into a meaningful, memorable whole (Ausaubel, 1963) which assimilates or accomodates itself to one's prior knowledge (Piaget, 1932). The plan to synthesize also has obvious benefits for the writing process insofar as it would produce a clear organizing idea, a structured integration of various sources, and the opportunity to place one's self in an intellectual discourse, combining one's own ideas with those of other authors (Spivey, 1984). (This is not to say all syntheses achieve this, but the plan leads in that direction.)

However, this plan also carries some very real costs. To begin with, it was not clear even to these generally successful college students what synthesis meant, when it got down to actually doing it. For one student, this quandry about the task was in fact the "interesting feature" of her own process as she found herself rereading the assignment and puzzling out what to do. As she found herself saying in the protocol,

> 'Interpret and synthesize' [re-reading the assignment]. What the hell does that mean? Synthesize means to pull together, no, to make something up. Why should I want to make something up? [She then re-reads and comments on the wording of the assignment.] Synthesis sounds like I'm making a chemical compound. Hmm. Put together. [Re-reads] "All of the relevant findings in the text." How can I do this?

And, in essence, this writer concluded that she couldn't or didn't, in fact, want to "make something up" and began at this point to summarize, saying,

> "Ok, I know everything about these few pieces of writing, about [reading from the assignment] how people revise. Okay, I'll write this down.... ***How people revise.***

Other writers set out with the goal of finding the unifying thread in the sources they read. However, we had designed even this short text to replicate the experience of normal reading (outside of textbooks). These authors not only disagree but focus on different aspects of the topic so that their main ideas resist falling into neat packages. For instance, how do the rather bare facts about business writers connect to the enthusiastic claims by teachers that good writers do extensive revision? One writer, who spent between two and three hours on the task, found himself caught in an extended struggle with his plan since the sources suggested two major, alternative organizing ideas, yet neither concept was supported enough in the sources to allow a clear choice. The comments here were separated in time and are numbered to reflect a sequence of points at which this writer was encountering the costs of attempting this organizing plan.

> 1. Uhhh, so what's the contrast here? The contrast seems to be between people who are experienced writers, versus students. Aaahhh, so wait let's see, [rereads text to see if students mentioned in the text were also labeled inexperienced].
>
> 2. Essentially the entire passage is oriented towards[...] probably about 75% of it is about editing and revision [...] and the remaining 25% is about planning. Planning is tied into revision because writers review their plans and goals, ...and then, and then how is that tied into revision?
>
> 3a. [Rereads assignment]...Statement about the process of revision
> 3b. Well, what have we got? What's the process? Well, revision is part of the process of

4a. Well, we have two main axes , two main axes of organization here...
4b. As in my notes we have, uhhh, we have good writers versus bad writers uhhhh, [looks at notes] vertically and horizontally...
4c. And various processes of revision in center stage [of his notes].
4d. So .....there is another potential organization to this paper.

Andrew's experience was not unique. The first hurdle for some students was recognizing that this information by "authorities" did not easily resolve itself into convenient, obvious, or even reasonable packages. They had trouble building a meaningful version of the source text(s) in their own minds. The next hurdle was forging a synthesis. Students who wanted 1) to base this synthesis *entirely* on the text and do justice to most of the sources and yet 2) to make claims they felt were supported by evidence, found themselves under enormous constraints. They had, I believe we would agree, given themselves a task that was simply undoable, given the information the source provided. Although many of these students questioned the assignment, few questioned their own representation of this task.

Students who attempted to create a synthesis based on a concept found in the source were far more likely to meet failure and have to revise their plan, even though most did so with some understandable reluctance. As one student said, "I don't like to think of myself as abandoning an idea." But when her attempt to neatly categorize the authorities failed she felt forced to change the plan and organize the essay around her own impressions. And that decision carried its own costs as she moved from *finding* , testing, and using a concept to *generating*, testing and using one.

The point here is that this plan carries very real intellectual costs. It can be difficult, frustrating and chancy. The source texts, one's own knowledge, and reality itself may resist synthesis. And there is always the practical question: is "making something up" even called for here; why would I want to do that? Representing the task in this way is a meaningful choice.

The Organizing Plan to *Interpret or Use Ideas for a Rhetorical Purpose*

Synthesis is an intellectually sophisticated endeavor. Because it asks the writer to re-organize and integrate information around a controlling concept, it is one of the mainstays of academic writing, especially of student academic writing. However, a synthesis, as we defined it, is primarily focused on conveying a structured body of information. It is rather like a standard textbook. Some of the writers we observed added a rhetorical dimension to their task by attempting to interpret their information in order to carry out a rhetorical purpose. (In using the term *rhetorical purpose* here we mean a purpose that goes beyond the goals of exposition defined as presenting a summary, comment, or synthesis).

We observed the presence of an active rhetorical purpose in three places:
1. During the composing process, some writers spent time attending to the audience or to their own interests and setting goals for what might be interesting or useful to do in this paper. These rhetorical goals--beyond exposition--helped dictate not only what information the writer would use and how it was ordered, but what organizing or synthesizing concept would control the text and why.
2. In some texts, there was a discernable rhetorical purpose organizing the essay, which took the form of making a claim, posing a question, or setting up an issue (e.g., "Is there really one good revision process, or does "good" depend on the kind of writing?"). The text functioned as a way to explore that question, to articulate sides of a debate, or to come to a conclusion. As a reader of these texts one had a sense of being involved in a guided inquiry that had a rhetorical purpose that went beyond conveying information.
3. In other texts the discernable rhetorical purpose took the form of addressing a particular reader and adapting the writer's knowledge to what that reader might need. These texts were often organized as advice to students or as plans for putting the research on revision to use.

This category of "interpret for a rhetorical purpose" raised some worthwhile problems of

definition for us that might be useful to explore here. To begin with, we need to recognize the ways a rhetorical purpose as we will define it differs from other related purposes. A teacher, for example, has an *educational* purpose in asking students to write a synthesis or interpretation--the purpose of the assignment is to teach these valued skills. A given student, on the other hand, may have an equally important purpose quite at odds with that assignment. This writer's *personal* purpose for writing may lead him to summarize as a way of thinking over and remembering what he found intriguing in William James. For that student, summary may have seemed the best personal use to which his writing could be put, regardless of the assignment. Purpose is also inherent in many textual conventions and genres (e.g., we could say the writer's purpose was to produce a summary, a synthesis, a description or some other conventional form). The *rhetorical* purpose to which we refer here is, by contrast, a set of goals, unique to this text, which functions for reader and writer as an explicit organizing feature of the discourse. (E.g., Kate's purpose was to get the students she had tutored to consider certain revision strategies she thought they didn't use.) The papers which fell into this final category were adapting, transforming, and integrating information from sources and knowledge in order to carry out a discernable rhetorical purpose in a unique piece of discourse.

Looking for a rhetorical purpose (as we have defined it) raised a second problem. Is the text a student produces always an adequate guide to the presence or absence of rhetorical purpose in the writer's own thinking? (Later parts of this study explored this important issue in some depth. Cf. Stein and Peck.) In our observations of the composing process many writers gave no apparent attention to matters of audience or purpose--beyond the conventional purpose of conveying information. In this case, the a-rhetorical, information centered plan that organized texts of these writers seemed to be an accurate reflection of their process and purpose. On the other hand, some students gave a variety of indications during composing, during revising, and in discussion that they did indeed have a rhetorical purpose in mind which was exerting an influence on their reading and interpretation of the source text. However, in a subset of these cases even when the protocols revealed an active sense of purpose, our independent raters saw little or no indication of interpretive purpose in the student's paper. From the reader's point of view there was no discernable rhetorical purpose controlling the text; the reader had not been brought into the discourse. We wonder if this phenomenon, which Peck describes as the "Intenders," is a common one. As students learn to manage academic discourse, they may be actively engaging in rhetorical thinking and trying new strategies of transforming knowledge before they are able to use that purpose to control a text. The reader may be the last to know. Teachers, it follows, may need to attend to both the process and the text if they want to see a student's development.

Finally, this category led us to ask a third question: Is synthesis really possible *without* a rhetorical purpose, (regardless of whether that purpose is discernable in the text)? Scardamalia and Berieter (1987) have suggested that children only move beyond what they call a "knowledge-telling" strategy to a "knowledge-transforming" strategy when they are able to rise to rhetorical planning . In this view it is the influence of other readers and other goals that moves children to transform or reconstruct their knowledge. Composition texts often assume that the best way to teach and prompt writers to synthesize their knowledge in new or creative ways is to introduce the needs of an audience. This pedagogical assumption is probably right. On the other hand, both the protocols and the texts show us rigorous, extended efforts at synthesis which are not driven by a unique rhetorical purpose but by an attempt to construct a coherent, meaningful, or comprehensive synthesis of information. The writer's purpose is defined by the conventions of the genre.

Carrying out a unique rhetorical purpose, we would suggest, calls for strategies of knowledge transformation that go beyond those required for synthesis (or other conventionally-defined purposes). Texts organized by a rhetorical purpose, of course, often have a synthesis, summary, or other plan embedded within them. But beyond that, organizing around a purpose asks the writer to define and often redefine this purpose itself, to then use it to organize or infer relevant information, and finally to make that purpose a discernable, controlling feature of the text in a way that invites the reader into the discussion. (We should note that this strategy of inviting the reader into the inquiry and revealing one's purpose is a feature of academic discourse,

not of rhetorical plans in general, such as those which underlie advertising, editorials, etc.)

Writers' unique rhetorical purposes can, by definition, take a variety of forms. Gary initially saw his task as using the research on revision to understand himself and (implicitly) to judge whether he was a good writer or not. He read each section in order to fit it into a private thesis he was building about what a "good writer " should do and at the same time to apply those "shoulds" to himself. Since he normally did not revise at all, this comparison and the conflict it engendered took up a large chunk of his reading and thinking-- it invoked strategies for comparing, testing ideas and evaluating that did not appear in other protocols. However, this effort was only apparent in the process data, not the written product, in which he chose to review the sources. The unique purpose which he used for private inquiry was not used as an organizing plan for the text, but it is a good example of a purposeful plan.

Gary's rhetorical purpose was in a sense directed to an audience of one. But unlike a "response to the topic" plan, it required him to use the source text, to interpret it in light of a question he posed, and to apply that information to the specific rhetorical purpose of comparing his practice with the "shoulds" he inferred from his sources.

Kate, the writer we referred to earlier, created a rhetorical purpose that involved readers and put even more demands on her reading-to-write process. Like a few other students in the class, Kate apparently assumed that even if an audience wasn't specified, it made sense to create one. So from early on in the process, she approached this material as potential advice for students she had known when she was a peer tutor. The interesting feature of her own process was the way this plan to advise helped her "bring out meaning." The strategies she described were ones that also turned up in the work of synthesizers: she tried to link the data in the text with her own experience. In order to select the important ideas to include, she used criteria such as, is this claim supported by lots of points in the source text, does it make a big difference, is it part of a controversy? The task of synthesizing was apparently embedded in her representation (just as the task of summarizing is often embedded in synthesizing). However, the larger plan which gave direction to her reading and writing process and gave structure to her text was guided by her rhetorical purpose. It was this purpose which let her put synthesis to work for a rhetorical end.

We have elaborated on this rhetorical plan because our experience suggests that students entering academic discourse seem less prepared for this rhetorical task than for summary, synthesis, or personal response. They seem, for instance, less prepared to develop their own goals in interaction with a source and often unaware that a text can be a good synthesis but a failure at achieving its purpose or adapting information for a reader. Students who do not recognize that rhetorical plans exist as a distinct option in academic discourse might also have trouble interpreting college assignments that call for original thinking or imaginative application of course material to a new problem.

A plan dominated by a rhetorical purpose has an important but unclear status in academic writing. It is clearly a risky proposition in doing assigned writing--you can get off the track and fulfill a purpose that is not shared by your instructor, especially if the instructor wants you to concentrate on the reading material itself or on the formal features of a genre, such as a critical essay or historical analysis. A rhetorical plan can make the writer's process a highly selective one, since the "relevant data" is that which contributes to the purpose. Although a rhetorical purpose involves using the source text, it may do so in idiosyncratic ways for purposes that the instructor finds surprising or not "relevant" to the purpose of the assignment. Furthermore, to use this plan, one must not only develop a purpose but transform information to fulfill it. This representation of a reading-to-write task as a rhetorical task has the potential for real costs.

On the other hand, this vision of one's task has considerable benefits. From a pragmatic point of view, it is a good basis for building an argument and for answering questions in college courses that ask you to manipulate ideas rather than just organize and recall them. It is also the plan that guides much of the reading-to-write that adults outside of school do when they read reports, instructions, or memos and write the same for their own purposes. In the larger scheme of

education, seeing writing as a rhetorical act and seeing the text as an instrument of purpose is an entry point into critical literacy. It is a plan that favors guts, maturity, and independence of mind as well as sensitivity to the response of the reader one is talking to. It allows students to treat the ideas and texts of others (including those of "authorities") as well as their own knowledge and texts as open to scrutiny and transformation. Facts can be not only tested but interpreted and put to different uses; claims and concepts can be evaluated and responsibly transferred to new settings. Using reading and writing for a rhetorical purpose brings together the receptive goals of literacy with both the testing and transforming actions of critical literacy.

2. HOW IS A TASK REPRESENTATION CREATED?

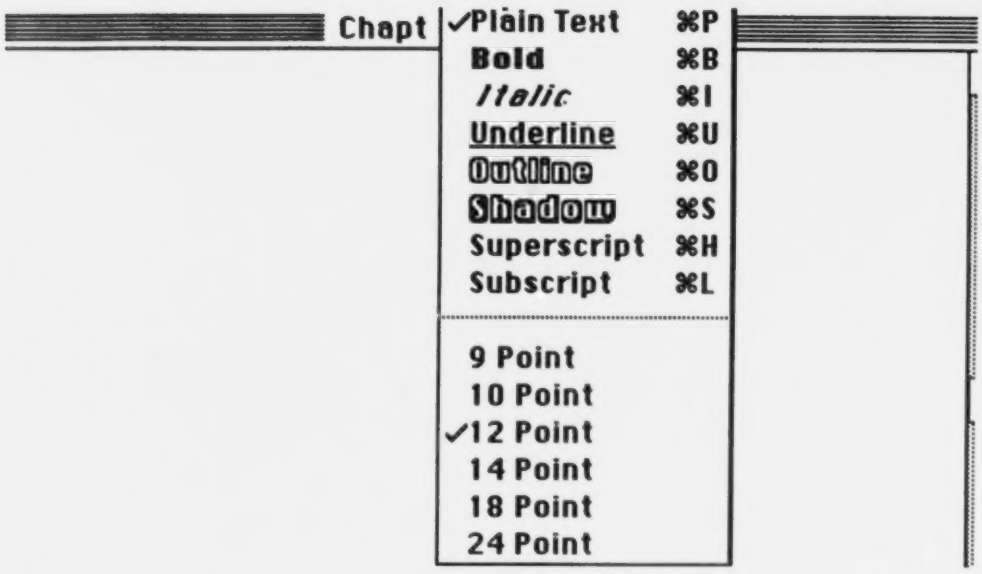
The Organizing Plan described above stood out as a dominant feature of this task, but it was not the only important feature on which students differed. As Figure 2 shows, writers on this task made decisions that differed clearly from one another in five areas. They made choices about where their Information would come from (i.e., the source text, their own ideas on the subject, both, or concepts and previously structured information imported to this discussion). They made choices about the Text Format and Features that seemed appropriate (i.e., informal notes or summary, summary paragraph[s] plus opinion[s] of the sort encouraged in high school; a standard school theme; or the sort of persuasive essay one sees in academic and professional writing). They made, as we have seen, choices about the Organizing Plan which guided both the reading/writing process and the plan of the text. In these first three areas, Information, Format and Organizing Plan, we have tried to present the major choices observed. For the last two areas, Strategies and Goals, we can hope only to present a suggestive list of the various strategies students described and the even wider set of goals they reported, which ranged from being creative to being comprehensive and accurately representing what they had learned.

The menu of options in Figure 2 is not the only way to categorize a writing task; it is a reflection of this particular task and necessarily incomplete at that. What it did for us was function as a backdrop against which we could observe both individual differences and the unfolding process of task representation itself. Given these five areas as important sites of decision and difference, when and how are those decisions made?

On the basis of these and later observations, we can propose a tentative theory of ***task representation as a constructive process***, organized around three principles:

1. The task a writer constructs is not a simple choice, but the integration of a set of options and schemas.

This principle makes two points. One is that an image of a task is not created *de novo*, but depends on the schemas, conventions, patterns, and strategies the writer already knows. However, these options are stored in many independent pockets of knowledge which must be integrated afresh for each new task. To present the notion of choice among options in the teaching phase of this study, we borrowed a metaphor from personal computers in which users must select their commands from a set of options offered by "pull-down menus." The menu in Figure 3 illustrates how computer users create the specs for the task the computer is to perform by visually "pulling down" a menu of standard options and selecting the features they want. This menu can be likened to a sub-set of discourse features which typically define a given writing task. This menu shows a set of "style" decisions a MacIntosh user must make. Another menu asks for "format" decisions involving spacing, headers, and footers and so on. As you will note, each of these menus usually provides a default choice that is invoked automatically if one makes "no choice." On the MacIntosh menu for "style," the default choice is 12 point type and plain text. This default decision guides the computer if the writer is not in active control of the process.



SELECTING OPTIONS FROM A MENU

If I don't bother to select, this is what I get--12 point type, plain text.

But I think this job calls for LARGE TYPE.

INDENTATIONS

LARGER TYPE? **OR MAYBE BOLD FACE.**

HOW ABOUT A SHADOW ?

& UNDERLINING *FOR EMPHASIS*.

Figure 3. Options on a Computer Pull-Down Menu

This analogy to a computer menu highlights two aspects of a constructive process that are easy to overlook. One is the sheer number of distinct menus or areas in which writers are making choices--whether they realize it or not--as well as the range of choices to be made within these areas. (Here, the computer analogy fails to capture the additional possibility of creating a new or unique option, unless we import a programmer into our story.) Secondly, the computer analogy shows how using the default option (e.g., using one's "standard" approach to a paper assignment) can be an efficient way to bypass problem-solving and leap in with familiar strategies. However, that happy leap doesn't eliminate the fact that a real choice, on a much fuller menu, was in fact made. Unexamined decisions made by default are still decisions.

Are there ways writers can streamline this decision process? Clearly leaping in with default

options and "standard" strategies can make some of the choices easy. Our initial question was, do these choices fall into packages, in which a given Organizing Plan, say, was always associated with a given set of choices about Information, Format, Strategies and Goals? This would suggest that writers had well-formed schemas for entire tasks of this sort, which they simply invoked, rather than actively constructed.

To some extent this appeared to be true of summarizing--it is strongly tied to the original text as its Information source and to gist and list Strategies, and yet the format summarizers chose did vary and their reasons ranged from showing learning to getting done quickly. This hypothesis, that writers are simply selecting among a set of ready-made schemas at the level of the entire task, ran into even greater difficulty on two grounds. First was the striking individual variation in the choices writers said they were making here and in Ackerman's later analysis of the freshmen (see Ackerman). Despite some predictable trends in these patterns (e.g., summarizing paired with gist and list), knowing a writer's organizing plan did not allow a reliable prediction about the Format or the Information source much less about Strategies and Goals.

Yet, if there are no general, shared schemas for this task, perhaps individual writers possess their own personal task schemas that they regularly invoke for school tasks. Although this hypothesis found some support, and writers did talk of their "standard" strategies, these students also talked of confusion, uncertainty, and conflicts within their own image of what to do. Students, it appears, may have standard strategies and partial schemas, but not have an integrated image of the entire task. This is not, we believe, because these were novice writers, but because representing complex writing tasks is by nature a constructive process. The next two principles attempt to account for the more active constructive process we observed even on this relatively simple task.

2. Because the process of constructing a task representation depends on noticing cues from the context and evoking relevant memories, it can extend over the course of composing.

Decisions students made about the five features of the task in Figure 2 appeared to be made at different times and for different reasons. Some decisions came out of planning or reviewing episodes. But others were the result of an opportunistic move. For example, some students started with the apparent plan to use the source text, until an interesting idea or inference changed the pool of information. This choice on the writer's Information "menu" was dictated by a local event, not by an initial, integrated vision of the task. Nor was it dictated by a conscious decision that a commentary paper would be more appropriate than a summary. A lucky event in the reading process determined a piece of the plan.

The schematic diagram in Figure 4 sketches the cognitive processes that could account for these observations and predict some of the problems these writers encountered. As other research has shown, Planning and Reviewing are both powerfully generative processes (Flower, *et al.*, in prep; Hayes, *et al.*, 1987). However, here we wish to emphasize the role "noticing" and "evoking" can play in shaping the task writers give themselves.

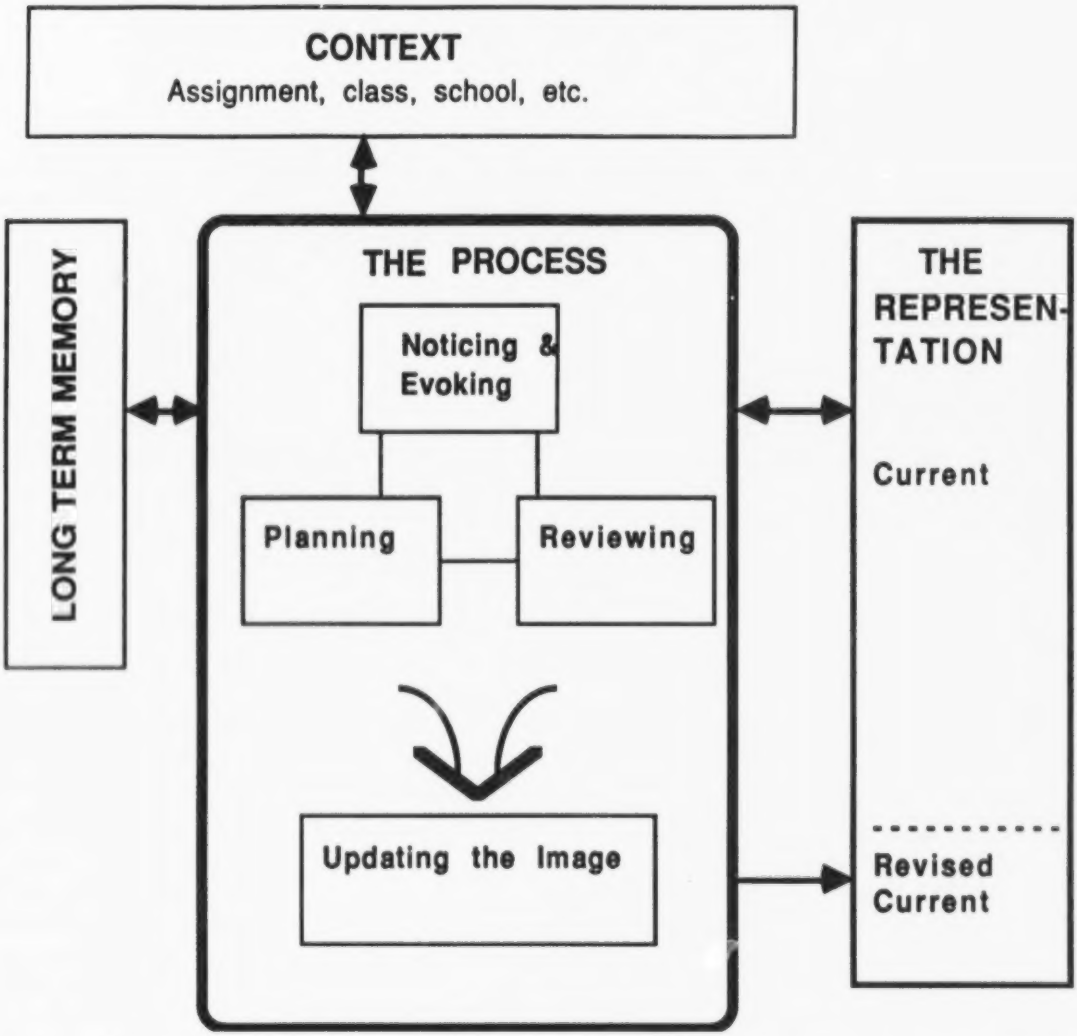


Figure 4. Noticing and Evoking Within the Process of Task Representation

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We can read this diagram as charting a set of possible loops in the process of constructing a representation. In one loop, the writer's current representation of the task is about to be changed by the process of noticing or evoking. We begin with the current TASK REPRESENTATION (located metaphorically in the box on the right) which at this moment consists of the major goals, constraints and strategies currently activated in the writer's thinking. The PROCESS of constructing (in the center box) is re-initiated in this case when the writer notices the word "synthesize" in the assignment (from the CONTEXT box). Noticing in turn leads her to search Memory and evoke a little package of relevant information on the subject (she doesn't know a lot about synthesis so this is a small addition). Or, in another loop, it occurs to her that her current plan to summarize is turning out to be rather boring (i.e., she "notices" and reflects on her own current task representation) and this sends her back to the assignment and the Context of writing (i.e., what am I supposed to do?) or back into Memory and Planning (i.e., what else could I do; what have I done before?). Or, finally, our writer might make an effort to evoke the memory of what was said in class or how the instructor typically responds to original ideas as information about what is possible on this task.

This noticing and evoking process is unlike the act of selecting a more or less complete schema for a task from memory. It is responsive to cues from the context of writing, to memory, and to evocative features of the current task itself--cues which may pop up at any point as more information is assembled or new possibilities open up (cf. Simon, 1973). It can go on during reading and writing without the writer's conscious control. However, it can also lead to a very goal-directed search of both the context and the writer's knowledge and an active period of Planning or Reviewing.

Noticing doesn't guarantee a change. The information this process generates can, of course, be lightly considered and ignored, or it can be used to update the current representation into a revised current representation. This act of updating one's image is an interpretive act. For instance, how will our student translate her instructor's habit of closely questioning students' claims (a cue from the context) into a constraint, a goal, or strategy for this task?

The constructive process may continue as result of this updating if it sends the writer into more planning and setting new goals. A revised representation that now includes "synthesis," for example, may call for a substantial new plan of action from the writer.

This small model lets us describe operationally: (1) how the process of noticing and evoking links context, memory and the writer's representation, (2) how this process can run on its own steam throughout composing, so that task representations evolve over time--even after the writer has a plan underway--and (3) how an interpretive act (the "updating") that stands between noticing and having a revised image can lead to some of the problems we observed. We will turn to those now.

3. Developments and changes in a writer's representation can lead to problems in constructing an integrated task and text.

As the diagram shows, the representation that an individual writer constructs over the course of producing the paper is not always stable. Writers in this study tried a variety of strategies: a successful move might suggest an organizing plan; an unsuccessful effort might lead to changes in the plan. This fluidity was not always welcome. Recall the student who "didn't like to think of herself as abandoning an idea" and dropped her initial plan to do a summary with a five paragraph theme format only when she was unable to neatly categorize the "authorities." Forced to come up with her own ideas for making sense of the sources, but clinging to the theme format, she finally resolved the dilemma by structuring the theme around a comparison of her ideas and those of the authorities. For her, getting the parts of her plan synchronized was the central event in her process.

As the noticing and evoking model suggests, a writer's image of the task can change in a piecemeal fashion. A new idea added late in the game may conflict with a goal set earlier, but the lack of integration can remain unseen. This may be one reason inexperienced writers end up with texts that appear to have been written by different hands. Looking at their protocols, a number of students discovered to their surprise that they had made dramatic shifts in parts of their representation part way through the task. For instance, one experienced student writer plunged into audience analysis and developed an interesting rhetorical plan around her readers--a plan which was elaborated in the protocol and evident in the text. However, in analyzing her own protocol Ruth discovered that near the end of writing, she seemed simply to forget this reader-based plan and switched to what she characterized as a standard theme and summary of information. The voice and viewpoint she had been cultivating was dropped, the diction changed and the paper ended on an unexpectedly lame note. Her inventive plan for the task had been replaced, without her awareness, by a simpler, doubtless more familiar, plan and practiced strategy, which yielded an oddly disjointed text. Yet we might speculate that it passed her own review because each section did fit different *parts* of the plan she had in mind.

A second student illustrates how this ongoing constructive process and its range of options

can lead to internal conflicts for a writer. Ann began with the apparently unquestioned assumption that she had to cover all the information in the source texts. As she worked on this goal, an internal critic would burst in and criticize her work for not being original and creative. She wanted to do a thorough synthesis, but became repeatedly disillusioned when the work so far did not also yield an insight that was personally relevant to herself or to the students for whom she wanted to write. The task she represented was not only unmanageable--her internal critic had a low tolerance for anything short of brilliance even during idea generation--but its plan for both inclusive synthesis and marked originality was in conflict with itself. This writer later mentioned that she had never turned in a major paper on time during her college career.

The questions raised by these observations are ones that this study can not fully answer. However, if the constructive hypothesis is correct, task representation may be both creative and difficult to manage precisely because it is an extended process and because tasks are not simply "selected," in the way old-fashioned textbooks used to tell students merely to select a thesis. Because this representation is constructed as the process of reading-to-write goes along, the opportunity for choice and revision of choice carries with it the chance of disjointed texts and conflicting plans.

3. COST, BENEFITS, COGNITION, AND GROWTH

Because we are educators, any analysis of organizing plans or text types is going to raise questions of value and assumptions about the difficulty or ease, the sophistication or simplicity of different plans. This analysis is no exception and we would like to consider and question three common assumptions one might use to rank these plans or choose which one to use or to teach. Each of these assumptions combines a persuasive element of common sense with a faith that the forms and modes of discourse (in this case organizing plans) are reliable indicators of sophistication, cognition or growth. It would be immensely convenient to the educational establishment if this belief were true. The first assumption we wish to question is that synthesis and interpretaton are more valuable approaches to take to a task, the second is that they are more cognitively complex, and the third is that text types can be arranged on a developmental scale.

Assumption 1. Concerning Value.

Assumption: Synthesis and interpretation are, in general, more valued ways of thinking, more sophisticated, more typical of mature thinkers. Expert writers on tasks of this sort would, of course, choose to do a synthesis or interpretation, and students should be encouraged to do syntheses and interpretations when they write.

Alternative Assumption: This study led us to an alternative view of value which is a contextual one. The best organizing plan is the one that fits both the situation (including the assignment) and the writer's goals. "Best" is always a trade-off of costs with benefits.

As this picture of task representation and of critically different images of the task began to unfold in these classes, the students' question turned to which representation is "correct" or, to put it more bluntly, how can I win the lottery and pick the "right representation" ?

Educators are likely to pose this same question in more elevated but equally evaluative terms--e.g.,which representation is better, more intellectually sophisticated, or educationally valuable? Consider the following arguments we could make about the "best" organizing plan: The summary, we could argue, is a foundation skill in reading-to-write. Doing a summary is embedded in most other processes. On the other hand, a summary by itself does not lead to critical literacy. A summary or review with comments can be the basis for critical thought, but it leads to rather limited texts. College writing calls for a more complex transformation of knowledge and more artful texts.

A text organized as a response to the topic fosters independent thinking, but it can also be an archetypal avoidance strategy that eliminates the need to grapple with a source text and another

person's ideas. It is often a substitute for "doing the assignment" even if the paper itself is good. On the other hand, I must admit that my work as a professional often depends on this plan: I begin to read others' work only to find it has triggered an idea of my own, and the springboard strategy takes over. I skim, I select, I follow my own line of thought, not the author's, and use the text before me to write my own.

Synthesis may seem like a safer choice for the "best" plan to teach and encourage. Bloom's influential effort to rank intellectual skills has placed synthesis at the top (1956). It is clearly a powerful and late developing ability that is regularly invoked in academic writing. Yet, from the perspective of rhetoric and problem-solving, I could argue that a rhetorical image of the task is even more widely valuable, not only for academic work but for reading to write in life after school. A rhetorical, interpretive plan often embeds the acts of synthesis and summary in itself and, it could be argued, requires an even greater transformation of knowledge than an information-driven synthesis. Furthermore, this rhetorical representation of the task is even more likely to be news to my students, hence more worth teaching. On the other hand, a rhetorical task is a selective process. Students who gave themselves the goal of interpreting for a purpose didn't, for example, see many of the contradictions in the source text. They didn't necessarily engage in the same sort of critical thinking the synthesizers did, and so on. In trying to answer the question, "what task should we do; what should we teach," there were always "other hands."

I have sketched out this inconclusive line of argument because I think it shows that we may be asking the wrong question when we try to create precise value-laden hierarchies of better or more lofty tasks and plans--at least in this context. The question of how to assign value sharpened when our group of instructors faced the issue of how to advise students, after we had helped them to see the power (and necessity) of their own choices. To encourage students to go for broke, to turn everything into a rhetorical task, for instance, or to give themselves the loftiest goals of creativity at every turn seemed alternately naive and hypocritical about the way writing operates in a context. Moreover, it simply didn't match the even more interesting reality of how active, professional people appear to operate.

The reality of the task representation process seems to be much better captured by the metaphor of personal costs and benefits than it does by a scale of right or wrong. Writing is a social, political act in the broad sense of the terms. A writer's purpose is a response to the context of writing. If there is little reason to reorganize or transform information, Martha's gist and list strategy is not only efficient but sensible. On the other hand, if a given paper assignment represents a step in the intellectual sequence of an entire course, it makes sense to give oneself the task of adapting the reading to one of the educational purposes of the course or to dealing with an issue that the course is raising. Taking on a task of this sort is more demanding than producing a summary, but the benefits are probably greater. College instructors, for instance, often expect students to carry out a purposeful transformation of ideas even when they don't say so directly.

Reading to write is also a personal, intellectual act and the question of costs and benefits to the writer is just as critical here. Some tasks are more difficult to do, but they allow writers to go beyond their current understanding, to make something that is meaningful to themselves, or to do something better than they have done before. On the other hand, elevated goals that are out of synchrony with time and occasion can be like the "rigid rules" Mike Rose described--inflexible demands which ignore that writing is "good" when it serves its purpose for the writer (1980). Ann, for instance, the writer's whose internal critic demanded creativity at every turn, did not feel she was in control of her own process or priorities.

Conceptualizing the writer's choice in terms of costs and benefits has an economic ring that may seem out of place in the humanities, in the way political metaphors used to seem. However, it is a powerful frame for thinking about processes and decisions that often go unrecognized. Although we have sketched some examples of costs and benefits in this chapter, the greater value of the concept is probably realized in action when we encourage students to look at their own process. Cost/benefit is a situational concept--it points to the trade-offs that people who are controlling their lives always make. It also points up a central contradiction in the economics of

being a student. Students do not always make the "commercial" choice--they often do not opt for the choice with the lowest cost and the highest short run benefit. Instead, they plunge into kinds of discourse they have not yet mastered, trying to talk the language, working in the faith that a " good idea" can pull you through and that making a serious attempt is the right thing to do. Our students regularly take on, try out, and plunge in when the costs in uncertainty and difficulty are high, because they are willing to give priority to learning or because good teachers have made the benefits of trying tangible ones. My point is this: the economic metaphor of trade offs does not presuppose that a learner will choose the same priorities as a slum lord or low cost /high profit manufacturer--but it recognizes the possibility of radical differences in students' and teachers' goals. In fact, it lets us examine the very differences in priorities one can set, in the benefits one values, and the costs and risks one is willing to incur. It also lets us recognize the common sense of efficiency.

In response to Assumption 1, then, we would replace any scale which assigns intrinsic value to certain text types and tasks with the image of a balance, as in Figure 5. The "right" task representation will depend on the way a writer chooses to balance her goals, her reading of the situation, her priorities, the use this text has for her or others, her time, her effort, the risks, her relevant knowledge and so on.

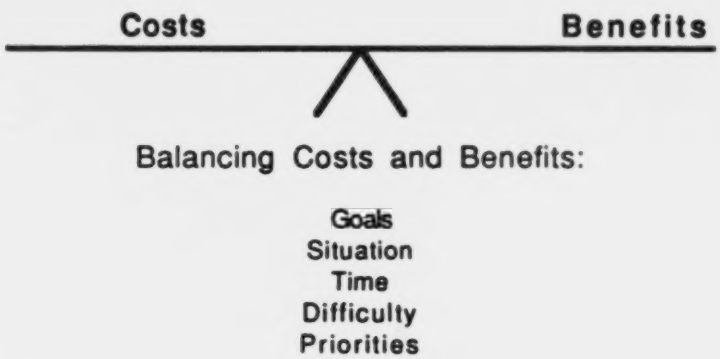

Figure 5. An Alternative Assumption About Value

One implication of this view is that task representation is a social, interpretive act that may involve contradictions. Although "what the teacher wants" may be a legitimate question, there is no simple answer. Writers must "read" the situation. Student writers must learn to figure out what different rhetorical contexts call for and, in many cases, to infer their options from limited experience and inconclusive evidence.

A second implication of this view is that the writer is empowered to make decisions about his or her own process and goals. In a sense the writer is unavoidably in control because reading to write is a purposeful process: he or she is making decisions and setting goals even when unaware of the options. On the other hand, this view raises the possibility of genuine empowerment in which writers are not only aware of options but of their own values and their decision processes. The question we will raise later in this study is, can we help students make this process of negotiating a task a more informed process?

Assumption 2. Concerning Cognitive Complexity

Assumption: A second assumption runs thus: Synthesis and interpretation, as we defined them in this study, may not always be the plans of choice, but they are the cognitively complex choice. They are more difficult to do, they require more intellectual maturity, and they lead to more

profound or complex transformations of knowledge. They are the hard tasks.

Alternative Assumption: The alternative to this assumption would define cognitive complexity as a feature of the writer's process rather than the text. It says that complexity does not reside in an organizing scheme, a text type, or genre; complexity is a function of the goals a writer sets within a plan--one can write a very complex, integrative summary as well as a simple-minded synthesis. The complexity of a given task can be measured by the knowledge transformation required to do it. However, the degree of knowledge transformation does not depend on a text type, but on the writer's prior knowledge and the extent he or she is willing or able to transform it. Text types and genres have always been convenient pigeon holes for tracking development and accomplishment but they can be hazardous categories of convenience, ***if what we really want to talk about is cognitive complexity.***

Figure 6 represents this alternative view of cognitive complexity as a continuum that goes from tasks that require low knowledge transformation to those that require a high degree of transformation--for the individual writer on a given task . What makes such transformation necessary or difficult? One key variable is the writer's prior knowledge. If a student comes to research on "time management" with well organized background knowledge and a predetermined unifying concept, synthesis will not require extensive transformation of that student's knowledge. (cf. Langer, 1984). Another easy road to synthesis or interpretation is to bring a current *idee fixe*, a dogmatic belief, or a favorite topic to bear on whatever one reads. The cognitive task can thus be reduced to selecting and arranging new information in a ready-made schema.

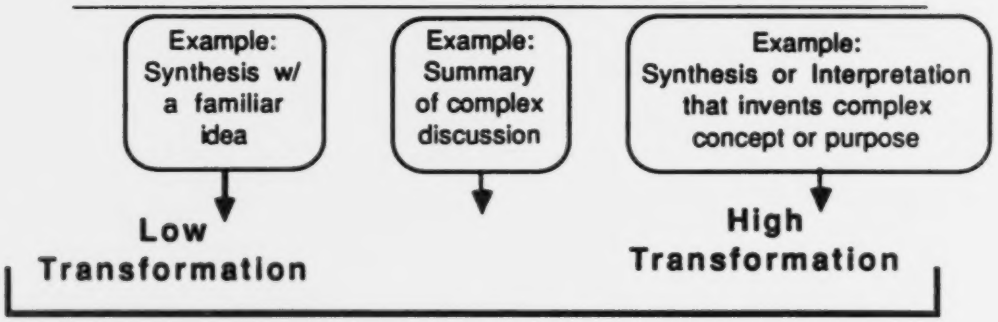
Example: Synthesis w/ a familiar idea
Example: Summary of complex discussion
Example: Synthesis or Interpretation that invents complex concept or purpose
Low Transformation
High Transformation
Knowledge Transformation Continuum Affected by:
Prior Knowledge
Amount and Complexity of Information
Level of Invention

Figure 6. An Alternative Assumption about Cognitive Complexity

A second variable that can shoot up the demand for transformation is the amount and complexity of the information. For example, a graduate student with a well-defined research question might find it much easier to conduct an extensive literature review by doing a synthesis of selected "relevant" information, than by accurately summarizing the gists, key points and implications of thirty internally complex papers in linguistics, psychology and literary theory. Or imagine trying to create a well-formed summary of a particularly lively, two hour seminar discussion. To do that the writer might have to wrench ideas from a temporal structure, based on who said what to whom, to create a new thematic structure based on the key issues of the discussion, which he would have to infer in some cases, transforming his memory of comments and his sense of implied meanings and emotional energy of the speaker into gists, and finally, reorganizing the whole body of local topics into a meaningful unit. A final example comes from

our task in which some students chose to increase complexity by dealing with planted contraditions in the original text--others didn't. And some students chose to use their own ideas--others didn't. This decision tells us something about the cognitive complexity of the task students gave themselves that was independent of whether they did a summary or synthesis. The complexity of their thinking processes was a function of how tightly they chose to integrate how much of the information they possessed.

The third variable we observed is the demand for invention, and the level at which it occurs. As the examples above make clear, transforming can go on at different levels in the writer's hierarchy of ideas. Writers restructure their knowledge in minor ways all the time when they draw connecting inferences and make local transitions and in more major ways when they draw the inferences that create a sense of gist. However, writing appears to make some of its most rigorous demands on knowledge transformation when the writer must invent information at the top level of a hierarchy of ideas. Some of the most extensive and most cognitively complex transformations come, as one would predict, when writers are attempting to forge a unique synthesizing concept (that can control the entire text) or when they are attempting to develop a unique rhetorical purpose that does justice to their goals, their knowledge, and their readers. This sort of invention is what gives academic writing its reputation for difficulty--even among experienced writers.

To sum up, it would be convenient if we could measure cognitive complexity or chart cognitive growth by a single analysis of text features, or if we could simply equate knowledge transformation with certain genres and organizing plans. However, it appears that cognition can not be so easily reduced to the more tangible features of text. As we have tried to suggest in Figure 6, the real measure of cognitive complexity is knowledge transformation itself. Text types can appear at various places on that continuum. Knowledge transformation happens within the head of the writer--in a given situation. It is a function of prior knowledge, the amount and complexity of the information one is trying to transform, and the level at which invention is going on. For teachers, this means that conceptual difficulty is not simply a feature of the task, but a feature of the writer's process that depends on where the student starts and where he or she is trying to end up.

Assumption 3. Concerning Cognitive Development

Assumption: Our third questionable assumption is that the sequence of tasks students are assigned as they progress through high school and college (from summary [Applebee, 1981] to independent analysis and interpretation) reflects a "natural" pattern of development. That is, students left to their own devices would progress through the modes just as our school system now requires them to do. The problem with this assumption of "natural" sequence is that it seems to go beyond the data. In recent research with kindergarteners, even the shibboleth that children's writing begins with narration has come under question (Dyson, 1986). Based on this presumption that natural development and cognitive capacities are expressed by certain modes, we soon find ourselves using those modes to measure capacity and in the next breath branding students who have not learned a given mode of discourse as cognitively or developmentally handicapped. Such cognitive pigeonholing is especially likely when students are underprepared--just the sort of student who would have lacked much chance to acquire the mode we are calling "natural."

And yet there is an important element of common sense truth observation underlying this assumption. I only need to consult my recent memories of student conferences or of my own freshman year to recognize the way students must struggle to move beyond knowledge telling, summary, or review and comment and come to grips with the demands for synthesis, for working at higher levels of abstraction, for using one's own knowledge and that of authorities, and for putting one's knowledge and reading to work in service of a unique rhetorical purpose. Common sense says that freshmen are indeed crossing a threshold that can be roughly equated with attempting more complex syntheses and rhetorical purposes.

Alternative Assumption: Our alternative assumption, then, would make a much more limited and contextualized claim. Students come to their freshman year in college with certain forms of discourse under their control--typically those forms of discourse which the school system has

asked them to practice for the last twelve years. Entering academic discourse means encountering new demands, learning how to meet them and practicing the same. The threshold we see students crossing may in reality be two different thresholds. As Figure 7 suggests, one is created by lack of familiarity and practice--especially for a rhetorical task. If no one has asked you to use your knowledge for a purpose within a community of peers, you will struggle while learning the ropes. The second threshold is created by way the writers of academic discourse must often plunge into knowledge transformation--a process that is typically difficult for everyone. Students, for instance, often write about knowledge they are still acquiring. Scholars and researchers are expected to address problematic topics with unique insights and sensitive adaptation of their knowledge. Academic discourse values invention that occurs at the top levels of the idea structure and such writing is often difficult, even if one has practiced it.

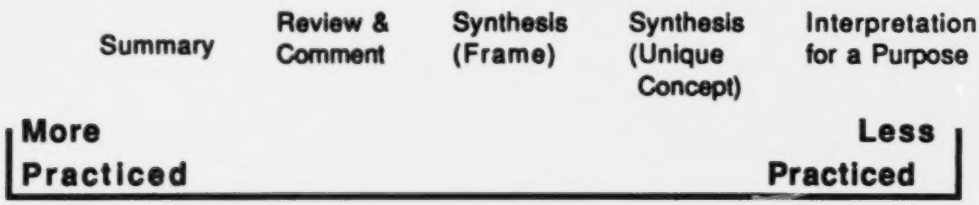

Figure 7. An Alternative Assumption about Development

Our caution then applies to confounding development with the effects of practice or the inherent difficulty of knowledge transformation. If students are being asked to represent writing assignments in new ways (to try for a unique, controlling concept rather than a commonplace) and to learn how to do these new tasks, many of the difficulties freshmen have are not a failure of high school education nor a problem of intellectual development. Their difficulties can be a signal that students are in the process of learning to do a new task, which we may need to teach more explicitly than we do.

In this discussion we have tried to lay out some of the assumptions we are making about how academic discourse and the tasks it poses are related to value judgments, cognitive complexity and practice. And we have tried to present three images of those relations that offer alternatives to three more familiar but problematic assumptions. We can use these three images in Figures 5, 6, and 7 to build a composite picture of the task many freshmen are facing in the transition from high school to college. Academic discourse is a game with many rules, many conventions, many patterns of argument and evidence. Some of the conventions are widely shared, some discipline-specific, but many are new to a freshman. Such discourse typically favors the text plans of synthesis or purposeful interpretation over the plans of summary and comment, although the latter are the plans a freshman is most likely to control. In terms of cognitive complexity, academic discourse often expects not just coherence (i.e., a well-formed thesis), but the integration of complex material, and it (sometimes) places special value on invention at the top levels of an idea structure. This means that a student's prior knowledge is less likely to do the job and that the most demanding kind of knowledge transformation is required. Finally, because the expectations of a new discourse community are by definition unknown, learning to represent this new task--even to recognize that it is in some ways new--is an important step. The benefits of trying to achieve a given set of goals or carry out a plan are uncertain even as the costs of attempting a partly practiced strategy go up.

If this composite picture makes academic discourse sound difficult, it may be realistic. On

the other hand, helping students see that any given assignment can be placed on the kind of practice and the knowledge transformation continua sketched in Figures 6 and 7 gives students deserved credit for what they can already do and for the new abilites they are mastering. It suggests that teaching has at least three agendas as well. First, to move students along the continuum of discourse experience, we need to give students experience and practice and a more demystifying insight into the conventions of the discourse before them. Secondly, to encourage the knowledge transformation we value, we need to teach the thinking strategies that help one to invent and integrate. Finally, to help students make informed images of a task and its costs and benefits, we may need to see task representation itself as a critical part of the process we teach.

4. TAKING METACOGNITIVE CONTROL: AWARENESS VS. STANDARD STRATEGIES

This Exploratory Study raised a final issue. Is task representation a process which is under students' control? Are their decisions made as a result of awareness of their options? This is a hard but important question to answer.

We will begin with a brief description of some of the forms this awareness took, using the four part model (presented in Figure 4)as a template to ask, what happens when writers not only perform an operation or possess knowledge, but are ***aware of their own performance or knowing***? How might awareness affect Long Term Memory, the current representation, the context, and the process of representing itself? When processes that can be carried out with little conscious thought cross the threshold into conscious attention, or when writers rise to conscious problem-solving, we often have an opportunity to see some of the thinking that distinguishes expert and novice (Flower, in press). We can also use the much more extensive research on metacognition in reading to help fill in the picture of how this additional level of awareness can affect reading to write. Although much of the reading research looks at younger readers, it helps us isolate those late-developing skills and demanding processes, such as comprehension monitoring, that probably affect adult performance too. Some problems never seem to go away.

Awareness and Long Term Memory

One can imagine some parts of Long Term Memory as a dimly lit storehouse of oddly filed and poorly cross-indexed information on all sorts of topics including summaries and syntheses. A great deal of information is there, but without awareness of the contents in general or a system for searching, it would be difficult to find and compare different pockets of knowledge. One useful measure of awareness, then, is the ability to conduct a metamemorial search of one's own knowledge, directing attention to memory itself. When Scardamalia, Bereiter and Woodruff (1980) asked 4th and 6th graders to generate lists of topics on which they had either high or low knowledge, the children found the task itself difficult; they couldn't compare their own pockets of knowledge in that abstract way. Moreover, the texts they wrote on high knowledge and low knowledge topics were indistinguishable. Knowing about your knowledge at a meta level and carrying out a metamemorial search appears to be a late developing skill.

Some writers in this study clearly had some distance on and a conceptual grasp of their own bodies of knowledge. Like Kate, they were aware that summaries and purposeful essays posed meaningful options and that "relevant" topic information was a quality they defined, rather than found in the task. For this task we could define one critical form of awareness as: possessing one's own version of a menu of options, like that in Figure 2, and being able to consider and compare those entities as alternatives.

Awareness and the Current Representation

If being able to search and reflect on one's own stable store of knowledge is difficult, monitoring the changing contents of working memory in the heat of writing can be more so. Writers need to be aware of the changing configuration of their own image of the task. The

protocols show us places where writers did indeed rise to problem-solving and reflection when they encountered a conflict among their own goals, or between the task they had embarked upon and the assignment (as they read it). However, the oral presentations also registered the surprise writers felt at looking at the shifting sands of their own planning in these protocols and discovering internal conflicts that they had not recognized as problems at the time. That is, although Ann, the writer mentioned before, had responded to the conflict between her internal critic saying "be creative" and her other goal to "be comprehensive," she had not been aware of conflict itself as an object for reflection.

Awareness and Context

Writers are inevitably in a context, which like language can be said to partially "write the writer" (McCormick and Waller, 1987). That interaction with one's context, whether it is the context of culture, the classroom, or the current assignment, can be automatic, reactive and unexamined, or it can be self-conscious and open to self-control. Critical literacy and critical consciousness are states of heightened awareness--knowing the covert messages context is sending and knowing your own assumptions and habits of response (cf. McCormick). In the initiation to academic discourse, Bartholomae (1985) argues, writers move from imitating and internalizing the conventions of a discourse to innovating within it. Awareness means the ability to invent/infer context even when it isn't given. In one study of expert and novice readers (Haas and Flower, in preparation), this awareness took the form of an active strategy. When experienced adult readers were asked to comprehend a difficult passage out of context, they used a rhetorical reading strategy in which they inferred a context, purpose, and author as an aid to making the text meaningfully coherent. This strategy was entirely missing from the performance of freshmen.

Writers in the reading-to-write study were at times explicitly aware of the context, but they often chose different aspects of the assignment to promote to awareness. Here are comments from three students that came on the heels of re-reading the assignment:

A1. OK. Now let's see if we can put this together into a [reads] <u>comprehensive statement.</u>
A2. OK. [reads] <u>The process of revision.</u>
A3. Topic sentence [and writer goes on to summarize].

B1. OKAY. Let's go.
B2. Two pages she wants.
B3. Let's get a lead [and writer goes on to synthesize in a breezy journalistic manner].

C.1. [reads] <u>Interpret and synthesize.</u>
C2. What the hell does that mean?
C3. Synthesize means to pull together.
C4. Not to make something up.
C5. Why should I want to make something up? [and writer goes on to summarize].

Awareness is, like any cognitive process, an act of selective attention.

While some writers were aware of the immediate audience ("Two pages she wants"), others saw the audience as an invitation to reflection and a constraint they had to invent. In experienced writers awareness of audience involves going beyond recognition that readers exist to setting goals to affect those readers (Flower and Hayes,1980). Here, some writers turned their sense of context into a self-conscious negotiation with the assignment, as we will see in detail later (cf. Peck and Ackerman). Awareness of this sort takes on special power because it becomes knowledge translated into action, as in the examples below.

Awareness and Process

Awareness of one's own process operates at a number of levels. The burst of recent research on metacognition in reading makes a distinction between the statable knowledge people

have about their own thinking (including the late developing capacity to reflect on that process as it is happening) and the active "regulatory" knowledge that lets people guide their own process and employ strategies such as monitoring comprehension, planning the next move, and evaluating the effect of a strategy for learning (Baker and Brown,1984). This research, reviewed by Baker and Brown (1984), has found that inexperienced and young readers bring surprising theories about the goals of comprehension to the process of reading (e.g., understanding a text means recognizing all the words, even if they seem unrelated). When it comes to monitoring comprehension, they fail to detect problems in their understanding and planted inconsistencies--a finding that Baker has extended to college students as well (1979). Finally, even when readers detect breakdowns in their comprehension process, they may or may not be able to invoke strategies for repairing the problem. This research suggests that the process of monitoring and repairing gaps in comprehension is difficult for us all, child or adult. However, the proficient college readers observed in process-tracing studies were distinguished by three features: their ability to talk about reading problems and strategies, the quantity of their comprehension monitoring comments during reading, and the number and kinds of strategies they used (Hare, 1981, reviewed in Wagoner, 1983).

We can see parallel kinds of awareness in the writers in this study.

a. At the lowest level of process awareness (and highest level of simple efficiency), we see writers using strategies which they invoke by name or category (e.g., "Let's get a lead") but which they do not examine.

b. At a little greater expense of metacognitive attention, writers also monitor their own process, noticing what they are thinking, what they have done so far, reflecting on whether it is working, or simply musing on their own experience. In this example, the writer is monitoring the associative path her own memory has taken, her own performance, and her current plan.

1. This is making me think of, one of the things I read was that inexperienced writers jumped into their writing and experienced writers, um would take a little more time to plan.
2. I guess if I want to fall in the category of experienced writer, I should make a little more of a plan myself.
3. Um... the plan that I have made so far is simply to write down either what I know or what I remember from reading this piece about revision.

c. Awareness at the level of monitoring sometimes leads to frustration if it does no more than confirm that the writer is indeed in a pickle. Awareness takes on new power when the writer can rise to conscious problem-solving and use this awareness to actually guide the process of reading and writing. In studies of the ways writers conduct the processes of planning (Flower, *et al.*, in prep.) and revision (Flower, *et al.*, 1986; Hayes, *et al.*, 1987; Flower, Carey and Hayes, 1986) this ability to rise to problem solving for resolving planning conflicts and for diagnosing and planning solutions to problems in text was a distinctive feature of experienced writers. Under these circumstances the writer's goals, constraints and possible strategies become themselves the objects of thought as writers engage in what Bereiter and Scardamalia have called "intentional cognition" (1983). The writer in the example below combines a lively awareness of her own interests and options (her habit of "giving a purpose" to things in comment #1), with the context and constraints set up by the assignment. Notice that in comment #2 she chooses the closing phrase we added for motivational effect as the instruction of interest, i.e., the purpose is to say what you think. In #3 she considers another potential plan (to adapt to students) and continues in #4 and 5 with a reflective monitoring of her own reading process, followed by an apparent decision to go with the initial plan (to make it interesting to myself) while the second plan (adapt this for my students) is left to percolate gently on a backburner.

1. Hmmm. I kind of like to give a purpose to, to the reason why I'm writing this other than just to write this.
2. [Rereads part of assignment] It just says we're interested in what you think.

3. Hmm... I'm wondering if I could write this in a way that it could be used for my students. [Writer is a beginning instructor.]
4. That's one of the things I was thinking about when I read this was how could I adapt this to be helpful to them.
5. And one of the things that I do when I write is I have to get some overall goal or purpose to write.
6. Right now I'm doing it just to make it interesting to myself.

How Aware Are Students of Their Choices and Process?

The Exploratory Study showed us that individual students possessed many kinds of awareness about their own task representations at many levels. But as educators we want to ask, were most of the students operating at a level of self-awareness in all four areas proposed by our model? Awareness is clearly a hard quality to measure and as teachers hoping to open new doors, we may be pleased to overestimate the novelty of what we teach. However, the net effect of the protocols, the presentations, and group discussions was to suggest that metacognitive awarnesss of the writing process and of task representation in particular is not a well-established part of the repertory of these students. Although they appeared clearly capable of and in possession of such awareness in isolated parts of their writing, they were not, appears, engaging in active metacognition about writing.

Support for this tentative conclusion came from various quarters. To begin with, the sharp diversity in representations that emerged from the presentations was a surprise to all of us. Yet as the options began to take a pattern, there was a general sense that important and familiar decisions were being made explicit. In their presentations many students registered surprise at the confusions, the contradictions, the inventions, and strategies that they saw in their protocols. Some were features of their process that they had not registered at all in the heat of composing. Others were strategies that they now realised were unacknowledged mainstays--and in some cases mainstays that could not support the more demanding work they were trying to do in college.

In a questionnaire completed by one class in this exploratory study, 50% of the students said they they had not even considered the written assignment closely (despite all the artfulness we had put into its design), but had simply invoked their "standard strategy." That decision was clearly a move for efficiency, but since students' operational definitions of this all-purpose "standard" strategy varied so much, one wonders how good that strategy was at pleasing many and pleasing long, given the varied demands of college writing. Finally, what does that move say about the writer's awareness of his or her own options, about the need to "read" the rhetorical context, and about the writer's control of her own cognition? The vision of a rich but unexamined process that emerged from this Exploratory Study led us to ask, what effect does task representation have on the reading-to-write process of freshmen--writers on the threshold of college-level academic discourse? This question led to the second phase of the project, the Teaching Study. The design and materials for the Teaching Study are presented in Report 1, "Studying Cognition in Context." The results of that study are analyzed from various perspectives in Reports 3-10 that make up this series entitled, Reading-to-Write: Exploring a Cognitive and Social Process.

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APPENDIX 1

The following instructions were part of the practice session which trained students to collect their own thinking-aloud protocols. They were designed to help clarify the dual roles of the writer and the protocol collector, although the use of a second person was optional.

Thinking Aloud While You Write

Instructions for the Writer

In the process of writing, people think and say many things to themselves that are quickly forgotten. Yet these thoughts are interesting and important parts of the writer's problem-solving process.

We are interested in the thoughts that go through your head as you work on this problem. We are asking you to do 3 things:

1. Work on the task as you **normally** would: read, think, jot notes, or just write. (However, don't erase. Simply cross through anything you don't intend to use.)

2. While you are reading, thinking to yourself, or writing--please **read and think aloud,** even as you are writing something down.

3. We are NOT asking you to talk about your process, or to explain or justify what you are doing. We want you to focus all your attention on doing the task. Simply think out loud, as if you were **talking to yourself** as you solved the problem.

****

Instructions for the Protocol Collector

1. Find a place that will be free from interruptions. (Put a sign on the door.) Have paper, pens, tape and everything ready before the writer gets the assignment. (Coffee & tea are fine; no gum.)

2. Before the writer begins, prepare the tape recorder by reading the subject's name, the date, and the name of the task onto the tape. Then **test the tape** by playing your introduction back. Put the mike on a towel or quiet surface and test for good volume and placement of the mike. Cue the tape to start at the end of your intro.

3. Ask the writer to do a short warm up session (3-4 minutes) thinking aloud on a practice task then listening for where you had to prompt before trying again. During the practice session **prompt the writer by simply saying "What are you thinking now?" whenever the writer falls silent for more than 3-5 seconds.**

4. Make sure the writer knows when the first side of the tape will be full and can turn the tape over if you will not be there.

5. TURN THE TAPE ON. Stay with the writer for the first part of the session to prompt the writer whenever he or she falls silent. If the writer mumbles, turn up the recorder and ask the writer to SPEAK UP.

6. When the session is over, **collect all the materials**--notes, drafts, text. Make sure the writer's full name, phone and address are written on the text. Make sure notes and pages are NUMBERED in the order in which they were written. You may need the writer's help to get this figured out.

7. Finally, protocols are typed double spaced, no paragraphs, with name and date, and with dots (. . .) for short pauses and underlined spaces (_____) for unintelligible fragments.

APPENDIX 2

Reading and Interpreting Data

Here is a short passage, including research results and observations, on the performance of experienced writers. Your task is to read and interpret this data in order to make a brief (1-2 page), comprehensive statement about the process of revision in writing. Your statement should interpret and synthesize all of the relevant findings in the text. As you read, please read out loud, and when anything crosses your mind, say out loud whatever you are thinking, even if it seems irrelevant or incomplete. Do whatever you would normally do, except say aloud whatever you are noticing or thinking to yourself as you read and make your statement. People think and do many different things while they are reading: we are interested in how you do it.

THE PASSAGE

Some Recent Findings on Writing

Recent research has found a number of differences between the writing processes of good writers and weak writers. When Pianko (1979), for example, timed the various actions of college student writers, she found that students enrolled in the remedial writing course (the weak writers) began writing about 40 seconds after they were given a topic. Students enrolled in the standard freshman writing course, on the other hand, waited for over a minute before they began to write. Pianko assumed that the students were using the time before they began writing to plan their essays, and concluded that the stronger writers did more planning than did the weaker writers.

Writers who approach writing as a problem-solving activity tend to treat editing and revising as useful steps in composing because these activities break the process up, making it easier to handle. They find that many of the problems that block writing can be solved when they return to the work as editors, and that editing is an inexpensive method (in terms of time and effort) for making dramatic improvements in writing. These writers feel that editing lets them concentrate on communicating with a reader.

Sommers (1980) interviewed a number of people who said they were experienced writers and like to write. She found that when they wrote, they normally did more than one draft and that they talked about revision as if it were re-vision, that is, a chance to resee their whole paper and possibly rethink and reorganize the whole thing. The students she interviewed described revision as cutting and "slashing out" unnecessary works, weak parts and errors. They usually didn't revise their papers.

Many textbook writers say that effective writers are rewriters. A first version, they often feel, is never as good as a second version, a second one as good as a third, and so on, so long as the changes from version to version are made for good reasons. But how do good writers arrive at good reasons? They evaluate their writing in three ways:

1. They set standards or criteria by which it can be judged.

2. They relate their subject to the criteria.

3. They draw the conclusions that follow.

Halpern and Liggett (1984) studied the writing of a number of business people who regularly dictated their letters, memos and reports. These people did a good deal of planning, but they did very little revision, especially of the spoken "draft." These researchers also found that when textbook writers and other researchers talk about the writing process, they are often thinking of the writing process of a certain, limited group of writers--essayists, journalists, academic, and creative writers, but not business people.

Good writers review their goals for their papers and the plans they used to implement these goals. Then they study their papers with those high-level goals in mind. They test to see not only if the papers fit their goals and plans, but also to see if their plans changed in midstream. Faigley and Witte (1981) found that when the experienced writers and journalists they studied revised a text, they made changes that affected the meaning of the text, not just the wording. Even when they changed only single words those changes would have altered a summary of the piece. The inexperienced student writers in their study stuck to finding errors and altering individual words, but their changes did not alter the meaning.

Revising often produces shorter words and shorter sentences. Witte (1983) asked a large group of students to read and revise a long paragraph from a textbook. After judges had sorted the revisions into "good" and "poor" ones, Witte found that everyone had made the paragraph shorter and used simpler words. However, the successful revisers had made deletions that emphasized the "gist," meaning, or main point of the original text; they had connected and subordinated the other sentences to it. The unsuccessful revisers did not seem to use the gist of the original to organize their revision, and their paragraphs had no single, clear focus.

TASK: Now go ahead and write down (on another piece of paper, please) your statement about the process of revision in writing based on your interpretation of this data.

Please think out loud as you do this. Be sure to let the tape recorder know if you are doing any rereading and what you are looking at. Make any notes, marks, or changes you want to, but please do not erase anything if you change your mind; just cross things out. And try to say everything that crosses your mind, even fragments and stray thoughts.

Thank you. We are interested in what you think.